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ABSTRACT

The Interstate Project on Dissemination specified four components as critical for a successful state information dissemination system: linkage, information, incentive, and management. An analysis of Pennsylvania's system, using this Project as a referent, uncovered several problems: (1) the linkage component was not functioning; (2) local education agencies could not adequately identify needs; and (3) there were no linking agents in place. In response to this situation, the Pennsylvania School Improvement Program (PSIP) was developed, linking the state's department of education, two intermediate units and three research agencies with ten pilot schools. The research agencies are Research for Better Schools, Research and Information Services for Education, and the Learning Research and Development Center of the University of Pittsburgh. PSIP is built upon an intermediate unit linking agent who facilitates two-way communication between a local school and research outcomes and products. This linker is supported by staff from the research agencies and by a school-selected team. There are four major PSIP strategies: needs definition, knowledge consolidation, research outcome selection, and implementation. First year evaluations indicated that regular, on-site involvement of the linking agent is essential to maintain the momentum of the PSIP process. (CP)

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THE RESEARCHER: WORKING WITH LINKING AGENTS TO BRING RESEARCH TO SCHOOLS

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The Researcher: Working With Linking Agents to Bring Research to Schools

Introduction

For many years a major gap has existed in education between the knowledge producer and the knowledge user. In less pretentious terms the outcomes of educational research and development activities have not reached the classroom practitioner. Estimates of this time lapse between the production of research and development (R & D) outcomes and actual use in the field range from 25 to 50 years dependent upon your point of reference. This situation is frustrating to both the classroom practitioner and the research community. The quality of the education provided for students is dependent upon the utilization of current up-to-date research and development outcomes that will increase the effectiveness of classroom practices. One of the charges that society gives to the educational system is to prepare students to cope with a rapidly changing world. If this charge is to be met then the research-practitioner gap in the knowledge production network must be reduced.

In the past, the results of research and development have been distributed to the field mainly through broadcast dissemination processes. Usually a final report, technical in nature, is sent to a selected audience of the author's professional peers. Journal articles are written and the document is entered into ERIC or a similar information retrieval system (where it is cast in microfiche to wait until a graduate student calls it up for inclusion in a literature review).

A good illustration of the difficulty in bridging this "gap in perpetuity" between researcher and practitioner is the situation in Pennsylvania. The Pennsylvania Department of Education (PDE) research unit has completed numerous research studies and many have been cited as major contributions to the educational knowledge base. However, none of these studies have had any major impact or extensive implementation in the state educational system. LEAs have received information about these research findings but none have been implemented beyond the initial site. In fact, in most cases the original site schools have not institutionalized the classroom practices field tested and validated in the district.

Processes for Adoption of R & D Outcomes in Schools

The preceding section of this paper notes the chasm between the researcher and the practitioner. If this chasm is to be eliminated or at least narrowed then processes must be identified to facilitate the utilization of research outcomes by practitioners. When the literature on implementing changes in education is reviewed certain conditions appear to affect the adoption of R & D outcomes.

In 1965, Guba noted that change in education based upon R & D outcomes has several stages. First, an awareness of an innovation/invention is developed through dissemination of information followed by a diffusion stage when R & D outcomes are examined and assessed by an education agency relative to local needs. The final stage in this process is the adoption phase when an R & D outcome is fitted to local characteristics, installed and then integrated into the regular ongoing program. Berman and McLaughlin (1976) report that successful adoption or implementation of an innovation occurs when triggered by a locally

identified need. Similar findings were noted by Naumann and Etienne (1974) and the RAND study in 1975. The importance of relating R & D outcomes to local needs before implementation in a school is supported by the 1975-76 evaluation of the State 306 Facilitator programs in Pennsylvania. Developer/Demonstrators noted that when awareness sessions were not preceded by local needs assessment few or no adoptions followed.

Because successful change processes require that locally identified needs be matched to appropriate R & D outcomes it can be considered as a linkage process. After an LEA has identified an area of need it must have access to a resource and information system that will provide R & D outcomes for consideration. Successful access to this resource system requires the establishment of reciprocal relationships among the resource system, resource persons and the LEA. The proximity of an external change agent or linking agent can facilitate both entry to the resource system and the development of the necessary reciprocity. The involvement of an external linking agent in this total process usually results in a more realistic analysis of the LEA's needs and more effective use of information by the LEA relative to appropriate R & D outcomes to be implemented. (Gross, Giacquanta and Berstein, 1971; Greiner, 1963 and Paul, 1977)

The literature cited assumes the availability of an information and resource dissemination system for an LEA to access in order to locate R & D outcomes. The characteristics of such a system are defined by the Interstate Project on Dissemination (IPOD).

In 1976 an IPOD report on dissemination specified the following components as critical for a successful state level resource and information dissemination system: (1) a linkage component, (2) an information

component, (3) an incentive component and (4) a management component. A recent study of educational dissemination in Pennsylvania (Stank et. al. 1976) used the following definition of dissemination. Dissemination is a process:

a. for communicating educational needs, problems, solutions and information among educational practitioners, decision makers and knowledge producers and

b. for facilitating consideration and use of the outcomes of research and development, effective educational practice and other knowledge that can be used for the improvement of education.

Using this definition and the IPOD model (Figure 1) as referents, information and resource dissemination activities in Pennsylvania were analyzed. The findings of this study showed that almost every bureau in the PDE was engaged in some type of dissemination activity, typically providing information through publications, newsletters, etc. These PDE activities were usually one-way communication rather than responsive to user defined needs. Information and products were typically diffused to the practitioner at the discretion of the PDE professional staff members. No follow-up or continuing interaction with LEA personnel relative to use of R & D outcomes was maintained. This same study reported that in addition to PDE information and resource activities four information service units function in Pennsylvania. The four units are: Pennsylvania Resource and Information for Special Education (PRISE), Vocational Education Information Network (VEIN), AdvancE and Research and Information Services for Education (RISE). VEIN, PRISE and AdvancE are restricted by their funding sources to serve special segments of the educational community. RISE does not have this restriction and serves the total educational community. There was no evidence that user access to these information services was triggered by locally identified needs. Typically the users were individual teachers or administrators seeking information about a

Figure 1. A State Education Agency Dissemination System

Components	Management		
	Information	Linkage	Incentives
Inputs	1. Client Information Needs 2. Practice Knowledge 3. Research and Development Knowledge 4. Legislation 5. Policy and Regulations 6. Statistical Data	1. Information Component Outputs 2. Incentives Component Outputs 3. Client Needs 4. Communication Skills 5. Specialized Knowledge	1. Money 2. Laws and Regulations 3. Policy 4. Authority and Status 5. Service Capacity
Activities	1. Identification and Collection 2. Storage and Retrieval 3. Transformation and Packaging	1. Communicating 2. Demonstrating 3. Consulting 4. Training 5. Assisting	1. Motivating 2. Impelling 3. Funding 4. Recognizing 5. Certifying
Outputs	1. Resource Guides 2. Literature Searches 3. Program Descriptions 4. Statistical Reports 5. Public Information 6. Newsletters 7. Knowledge Production Needs	1. Client Awareness 2. New or Improved Staff Competencies 3. Utilization of Resources 4. Program Adoptions and Adaptations 5. Client Needs Reduction	1. Information Utilization 2. Linkage Utilization Resources 3. Awards and Commendations 4. Certification and Accreditation

From IPOD Report

problem area unique to their own professional responsibilities. The conclusions of this study were that as of 1976 in Pennsylvania only two of the critical elements (other than management) for a dissemination system were in place in the state educational system. Information systems were functioning and the incentive system existed as an integral part of the regulatory and financial responsibilities of the SEA. In addition to these two critical components it was noted that Pennsylvania has several regional educational laboratories, a network of universities and colleges and an SEA research unit--all sources of R & D outcomes for the information system. Another condition noted as favorable to dissemination was the state governance system for education. The SEA is linked to the LEAs by a network of intermediate units. However, even with the existence of R & D producing agencies, the information service units and a governance structure conducive to linkage, R & D outcomes were not being effectively diffused to the LEAs.

The literature cited shows that when R & D outcomes are implemented in schools the school moves through several phases ranging from awareness to institutionalization of an R & D outcome. This process is more likely to be successful if it is triggered by locally identified needs. After an LEA has identified a problem or need area, access to a human and information resource system is necessary to match LEA needs to R & D outcomes. Ideally, this system includes a linkage component as well as an information component and entry to the system is facilitated when an external linking agent is present to interact with the LEA.

An analysis of the information resource system in Pennsylvania revealed that several of the critical elements necessary for successful dissemination of R & D outcomes to LEAs were missing: (1) a natural

structure for linking activity exists in the SEA-IU-LEA relationship but a linkage system was not functional, (2) LEAs did not have the capacity to adequately identify problem areas so that needs could be matched to R & D outcomes and (3) there were no linking agents in place. In an effort to remedy this situation, the PDE initiated the Pennsylvania School Improvement Program (PSIP) in July 1976. PSIP is one of the seven Research and Development Utilization Projects funded by the National Institute of Education.

PSIP--A Linkage System

The Pennsylvania School Improvement Program (PSIP) links the Pennsylvania Department of Education, Northwest Tri-County and Colonial Northampton Intermediate Units, and research and development agencies with ten pilot school districts to provide assistance in improving basic skills instructional programs. The research agencies are: (1) Research for Better Schools, (2) Research and Information Services for Education and (3) the Learning Research and Development Center of the University of Pittsburgh.

PSIP's objectives are, first, to help schools analyze their needs in the basic skills area and second, to help schools improve student performance in basic skills by using the best available instructional programs and techniques produced by research and development activities.

Another thrust of PSIP is to study the cooperative arrangements and efforts of the PDE, intermediate units and various research agencies. Particular emphasis is directed toward studying the linkage role of a change agent or Linker placed on the staff of each of the two intermediate units.

The basic structure of PSIP is built upon the concept of an Intermediate Unit Linkage person serving as an educational extension agent who facilitates two-way communication between a local school and sources of R & D outcomes/products. This Linker is supported by a team of persons from the R & D agencies that provides technical assistance to a school site through the Linker. This team is called, for PSIP purposes, a School Assistance Team (SAT). The SAT always includes staff members from one or more of the participating agencies, a person with expertise in the content area

of interest to the school site and the IU Linker. The SAT works cooperatively with a Local Action Team (LAT) selected by the site school to analyze both student and program needs and then to select and implement an R & D outcome appropriate to these needs.

The Pennsylvania Department of Education is responsible for managing and directing PSIP activites. The participating agencies are described in the following paragraphs.

The Learning Research and Development Center (LRDC) -- The mission of the LRDC, part of the University of Pittsburgh, is to develop, study and evaluate adaptative educational environments for schools. LRDC has had experience in instructional design, curriculum analysis, policy analysis, teacher education and computer application in education.

Research for Better Schools (RSB) -- RBS is a private nonprofit educational laboratory established in 1966. Its mission is (1) to research and develop instructional systems and materials to improve educational processes for preschool through adult programs and (2) to assist regional education agencies in preparing and carrying out changes in the educational program.

Research and Information Services for Education (RISE) -- RISE operates under the primary sponsorship of the Montgomery County Intermediate Unit in cooperation with the Pennsylvania Department of Education. RISE has broad experience in disseminating information on curriculum research drawn from local, state and national resources.

The Intermediate Units (IUs) -- The state's IUs provide consultative, advisory and program services to local schools. An IU coordinator serves as a full-time linkage agent to provide assistance to schools involved in PSIP activities.

PSIP Strategies

There are four major strategies in the PSIP process: (1) Needs Definition, (2) Knowledge Consolidation, (3) Selection and (4) Implementation. Each of the major processes incorporates planned and structured LAT/SAT workshop-type activities and follow-up assistance by the IU linkage person to supplement each major workshop. These sequential interrelated processes result in an upgrading of the LAT's skill in the use of needs analysis techniques to improve instruction, in the documentation of priority areas for improving the basic skills program, in the LATs reviewing and selecting available options and finally in the implementation of R & D outcomes in the schools.

Needs Definition -- Needs definition is the first phase of a school's participation in PSIP. The LAT works cooperatively with the SAT in a problem-solving process to analyze student needs and program needs.

Knowledge Consolidation -- This phase consists of an Outcome Search and a comprehensive Literature Search for research and development outcomes pertinent to (1) basic skills instruction and general learning theory, (2) principles of diffusion and dissemination activities, and (3) school organization and curriculum development processes.

The Outcome Search identifies effective educational practices in basic skills instruction, screens the educational practices for validity and availability and analyzes them using criteria developed by the LAT during the needs definition phase. A bank of appropriate, usable alternative practices for basic skills instruction is then submitted to the LAT for consideration.

The Selection Process -- The selection process involves developing the final selection criteria related to local school conditions, screening possible educational practices using these standards, selecting the practice that best meets the standards and producing a general plan for implementing the R & D outcome selected.

The Implementation Process -- The LAT and the SAT work together to develop a realistic plan for implementing an R & D outcome in the school curriculum. Staff members are trained, and the new instructional process becomes operational. The SAT provides technical assistance to the LAT in evaluating the effectiveness of the new procedures and assists in modifications when necessary.

Description of PSIP Activities

Organizing the Needs Analysis -- This phase of the needs analysis provides the Local Action Team (LAT) with an overview of the needs analysis process, helps them to begin to function as a problem solving team, and focuses the need area for later concentration. The major activities are:

1. Organization and Orientation. A workshop designed to orient the LAT to the entire needs analysis process and to help the group begin to function as an effective problem solving team.
2. Defining a General Need Area. A workshop to develop a general statement of the school needs on the basis of a review of School Profile data.

The Research Utilizing Problem-Solving (RUPS) materials are used during this activity. The outcomes of the sessions are the appointment of an LAT coordinator and a general problem statement for the school.

Analyzing Student Needs -- This activity is designed to clarify the discrepancy between desired student performance and current student performance and to prepare a detailed statement of student needs on the basis of that discrepancy. Structured sessions are based on Curriculum and Instruction: Planning Improvement, a handbook developed by RBS. The outcomes of the Student Needs Analysis sessions are a chart showing desired student performance in a basic skill area, standards for this performance and a description of the target population; a chart showing current student performance in these areas; a discrepancy analyses of the charts and a detailed statement of student needs.

Analyzing Program Needs -- The purpose of this phase is to identify aspects of the current educational program which might be strengthened in order to improve student performance in the defined need area. The materials used for program analysis are: a model of classroom processes developed by research at LRDC, instrumentation based on the variables from this model, and data from other needs analyses activities.

During the program analysis sessions the LAT is provided with an overview of the factors which R & D suggest relate to student performance. The LAT then decides which of these variables should be investigated. Instruments are constructed and data are collected by the LAT and the Linker. The SAT analyzes the data and submits a summary of the findings to the LAT for consideration in producing a statement of program needs.

Selecting R & D Outcomes -- During this activity the LAT is first presented a set of R & D outcomes selected by the Knowledge Consolidation component using the data generated by the student needs analysis and the program analysis activities. These R & D alternatives are reviewed and screened by the LAT using site-specific criteria. There are two or

three elimination rounds to the process. The outcome is selection of some R & D product/process for implementation.

Implementation -- The installation activities provide the LAT with technical assistance in planning, implementing and evaluating the R & D outcome selected by the site.

The Role of the Linking Agent in the PSIP Process

The keystone for success in the PSIP model is the IU Linker who functions directly with the Local Action Team (LAT) on an ongoing basis. This Linker provides the external expertise needed to move the LAT through the four-step problem solving process. He/she is also instrumental in linking the LAT to external resource persons or secondary Linkers serving as a School Assistance Team (SAT). The SAT in turn provides back-up resources to the Linker when necessary.

The PSIP Linker is basically a change agent. The Linker initiates entry into a school district and builds the rapport necessary for a successful change effort. The IU Linker is a generalist with broad-based expertise in interpersonal communication skills and group processes. In addition, he/she is expected to have a primary area of expertise in some curriculum area by virtue of past training and classroom teaching experiences. This linkage agent is expected to build a relationship of trust with the LAT. He/she needs both internal and external orientation in relationship to the LAT. The Linker must be knowledgeable about the change process and especially the critical features of this process and his/her role in it. Because of the high intensity of the Linker involvement with the LAT during PSIP activities, he/she must have a broad role base that will allow selecting appropriate roles for emphasis in varying situations. This is especially important when an LAT is reluctant to enter into a full working team relationship. The Linker almost has to be all things to all people--confidant, leader, resource person, liaison to external resources, intermediary with higher level administrators, provider of sustenance, broker of R & D outcomes and R & D advocate are only a sampling of Linker roles practiced during the

PSIP process.

The expected practical Linker responsibilities defined by PSIP are given below. The IU Linker is expected to:

1. Plan with the LAT coordinator and the SAT for each major session.
2. Collect all materials necessary for any session (including school data, student desired/current charts, a summary of the previous SAT/LAT meetings, etc.).
3. Provide and lead planning meeting of the SAT prior to any session and give them all materials.
4. Make follow-up contact (visit) with the site after each major session to find out about concerns, problems, etc. These are communicated to the SAT and PSIP management.
5. Have personal or telephone contact with every school every week--not just the princiapl but with the LAT coordinator. The coordinator is the Linker's contact but you should touch base with the principal to keep everyone informed. All sessions are planned with the LAT coordinator.
6. Hold "formal" major activities (in-service meetings) on a two to two-and-one-half ($2\frac{1}{2}$) week cycle. This keeps the momentum going. The Linker will be aware when a greater time lapse is necessary.
7. To know the expected sequence of activities, he/she must also know which activities cannot be scheduled out of sequence, e.g., T_1 of interviews, commentary, Q sort, PSIP evaluation instruments, etc.

8. Understand the PSIP process, the relationship among the activities and the reasons for each activity.

In summary, the PSIP Linker is a process facilitator, a technical advisor, a provider of reciprocity between knowledge resource systems and knowledge users, a trainer, a developer of inter- and intra-group communication, a disseminator/diffuser of R & D outcomes, an organizer and a program administrator. Many of these roles are overlapping and often concurrent. The skill of the Linker relates directly to his/her awareness of the role variability and his/her capacity to adjust the role to the requirements of each LAT situation.

The success of the IU Linker in increasing the use of research and development outcomes by classroom practitioners can best be illustrated by describing the progress of PSIP in the IUs.

The Linker and Use of R & D Outcomes in PSIP Needs Assessment Activities

Currently, 10 schools within two IUs have participated in PSIP. All 10 have used the Research Utilizing Problem Solving Process, an R & D product from the Northwest Regional Educational Laboratory as part of the needs assessment activities. All of these schools have also used an R & D product developed by Research for Better Schools--Curriculum and Instruction: Planning Improvement during the student needs assessment process. The Linker provides the LAT with leadership in the use of these products.

The Linker and Use of R & D Outcomes in PSIP Program Analysis Activities

When nine of the schools became involved in program analysis, the Linkers introduced the Cooley-Lohnes model of classroom processes. The model was developed as the result of an extensive research project at

LRDC and with Linker leadership it is used by the LAT to analyze the current program. There are four major constructs in this model: Opportunity, Motivators, Instructional Events and Structure. Research supporting these constructs has been summarized by Dr. Doris Gow and all of the schools in the IUs have received copies of this summary, A Synthesis of Current Research in Basic Skills, and also a more informal document, R_x for Teachers written by Dr. Gow. Both of these R & D summaries are provided for the LAT members by the IU Linker during program analysis activities and he/she explains the research supported model.

The Linker and the Knowledge Consolidation Phase

Each LAT produces data relevant to local needs during the major activities of the needs identification phase. The IU Linker compiles this data and shares it with RISE and LRDC for use in screening the pool of available R & D outcomes. The LAT is made aware of this screening process by the IU Linker and also of the sources of the pool of R & D outcomes to be searched.

The Linker and LAT Selection of R & D Outcomes

Three schools have entered the selection phase of PSIP. Research and Information Services for Education (RISE) has provided the Linker with both information and demonstration packets of R & D outcomes specific to each school's identified needs. Each school has developed selection criteria for use in screening these R & D outcomes for possible implementation. School A received a pool of 29 R & D outcomes, School B received 12 R & D outcomes and School C received 17 outcomes to consider. The IU Linkers acted as a liaison between RISE and the LATs in this process

and the screening of the R & D outcome is directed by the Linker. At this point, one school has entered the implementation phase of PSIP and with the assistance of the IU Linker, the SAT is planning to implement an R & D outcome.

Summary

From the above instances, it is obvious that through both the IU Linkers and the secondary Linkers on the SAT, R & D outcomes are being utilized by LEAs during the PSIP process. A problem solving approach to school improvement has resulted in increased awareness of R & D outcomes on the part of LEA staff and in the selection of R & D outcomes for implementation. One of the important learnings of PSIP is that the on-site regular involvement of the IU Linker is essential to maintain the momentum of the process. Just information about R & D outcomes is not sufficient to motivate schools to use them. It takes information plus the face-to-face involvement of a linking agent to successfully implement R & D outcomes in an LEA.

The IU Linking agent provides the external support necessary for the LAT to analyze their needs and to plan for instructional change. He/she also is seen by the LAT as someone the administration will listen to, a person who can successfully relay the results of LAT activities to the decision makers. The IU linking agent is also recognized as the channel for future access to the R & D resource system.

An end of the first year evaluation of PSIP activities showed that all of the LAT participants in all of the schools had increased in their awareness of the availability of R & D outcomes and of the resource agencies available in the state. The value of the linking agent in making R & D outcomes available to them was noted by all LAT members in

every school. Many stated that this was their first opportunity to use a problem solving approach to address areas of need. All respondents indicated that they will use the processes (RUPS, LRDC Model of Classroom Processes, etc.) in other situations. One LAT member recently stated, "I've already started to change the way I teach because of what I learned about the classroom processes." Another school has added an R & D outcome to their regular program as a by-product of the selection process. The R & D outcomes summarized in the R_x for Teachers have been used by many of the teachers to modify their classroom strategies. Other instances of R & D outcomes reaching the practitioner could be cited but neither time nor space will allow extensive documentation. It is sufficient to say that the PSIP linkage system through the IU linking agent has succeeded in bridging the gap between educational researcher and practitioner. We've really put research into practice in Pennsylvania, something the SEA research unit could not do before PSIP and the IU linking agent.

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